# THE APPLE ACE INTERFACE MANUAL

#### THE APPLE INTERFACE MANUAL

The Apple Interface Manual contains information on the following:

switch settings pin outs necessary driver settings interface cables

We have given you the facts on all possible connections between the different Apple products, and have suggested configurations to help you to get the equipment up and running quickly and easily.

We hope the Apple Interface Manual will help you to speed up the process of installing Apple equipment and to cut back on those expensive, time-consuming telephone calls to Apple.

Reproduced compliments of Apple Technical Support, Cupertino, California.

"2 - preface 1.PICT" 86 KB 2000-11-12 dpi: 400h x 400v pix: 1970h x 1539v

The Apple (Peripheral) Interface Manual -- October 1984

October 20th 1984

Compiled by Clive Girling and Ian Summerfield.

Apple and the Apple Logo are trademarks of Apple Computer, Inc.

The information contained in this manual is copyright of Apple Computer (UK) Ltd. and Apple Computer, Inc. ©Apple Computer (UK) Ltd. 1984, ©Apple Computer Inc. 1984, and any unauthorized copying, duplicating, selling or other distribution of this manual, in whole or part, is prohibited.

Apple Computer (UK) Ltd. makes no warranties in respect to the content of this manual, and all liability therefore is hereby excluded to the maximum extent permitted by law. In no event shall Apple Computer (UK) Ltd. be liable for indirect, incidental or consequential damage.

Reprinted in USA -- 1985

"3 - preface 2.PICT" 87 KB 2000-11-12 dpi: 400h x 400v pix: 1977h x 1467v

Source: Apple Computer Inc. UK

Page 0003 of 0048

#### Interface Manual

#### **Contents**

# A.... Apple // Interface Cards B.... Apple //c Ports C.... Apple //c Interface Ports/Cards D.... Macintosh Interface Ports E... Lisa Interface Ports/Cards F.... Plotters & Printers G.... Configuration Tables

Interface Manual

"4 - contents.PICT" 49 KB 2000-11-12 dpi: 400h x 400v pix: 1713h x 2875v

Source: Apple Computer Inc. UK Page 0004 of 0048

#### Apple // Interface Cards

#### **Contents**

Page	Description
A.2	Super Serial Card
	Parallel Interface Card (2PIC)
	High Speed Serial Card
	Parallel/Centronics Card
	Communications Interface Card

Interface Manual

Page A.1

"5 - a1.PICT" 47 KB 2000-11-12 dpi: 400h x 400v pix: 1545h x 2905v

Source: Apple Computer Inc. UK

Page 0005 of 0048

#### **Super Serial Card**

Part # 670-8020 Order # A280044

#### Pin Outs (Jumper block towards modem)

10 Pin	DB-25	
Header	Connector	Signal Name
_		
$\frac{1}{2}$	1	Frame Ground
2	2	Transmit Data (Tx)
>	3	Receive Data (Rx)
4	4	Request To Send (RTS)
<b>&gt;</b>	5	Clear To Send (CTS)
0	6 <i>.</i>	Data Set Ready (NSR)
· / · · · · · · · · · · ·	19	Secondary Clear In Send (SCIS)
0	/	Signal Ground
10	20	Data Terminal Ready (DTR)
10	8	Data Carrier Detect (DCD)

Note: Jumper Block pointing towards Terminal acts as though a modem eliminator cable is installed (see page G.2).

Interface Manual

Page A.2

"5 - a2.PICT" 84 KB 2000-11-12 dpi: 400h x 400v pix: 1815h x 2875v

#### Super Serial Card

<u>Switch Settings Printer Mode</u> (Jumper block towards terminal)

ı			Suit	ich :	SU1					Swi t	ch S	W2		
	1	2	3	4	5	6	7	1	2	3	4	5_	6	7_
Mode Selection:														
Printer Mode					()FF	C#E								
SIC P8 Emulation Mode						OF F								
SIC P8A Emulation Mode					OFF	OFF								
Special Switches:						101101 101101								
Interrupts OFF							33	<b>多</b>					OFF	
Interrupts ON						991.99 2002		88					<b>())</b>	
Normal Clear to Send			30.00				ON							O¥.¥
Secondary Clear to Send							OFF							<u>(34)</u>
Baud Rate:								[集集]						
undefined	<b>O</b>	<b>W</b>	CN	CM	3000			<b>養養</b>						
50	ON	CNT	CN	OF F				<b> 登集</b>						
75	<b>O</b>	CN.	OFF					<b>養養</b>						器器
109.92 (110)	<b>CN</b>	<b>C#</b>	OFF		3000									
134.58 <b>(</b> 135)	<b>E</b>	OFF	CH	(M)										遊遊
150	鎌	OFF	CAR.	OF#										
300	CM	OF F	OF F											
600	OH	OFF												
1200	OFF	CN	<b>GB</b>	OK.										養養
1800	OFF		ON	OF T										
<b>240</b> 0	OFF	(3)	OFF											
3600	OFF	Q)	CFF	OF										
4800	雙	OF	<b>3</b> N	(1)				188						
7200	OFF			<b>(*)</b>				接続						<b>養薬</b>
9600	OFF	OF I	QF F	(8)										
19200	DEL	(#1	<b>17</b>	Œ		33000 100100	****		- 116	- 31.		•••••		
Data Format:								201					333	
8 data, <u>1</u> stop								CN						
8 data, 2 stop		- 44 44	- 444				10.20	OFF	-		30000			30.00
Line Width/Video:										es.		33333 33333		
40/video on										ON ON	(SF)			
72/video off	- 第第									OFF				
80/video off										OFF	CF F	3333		
132/video off						- 11111				4		- 33	-	•••
Delay after (CR) Out:									ace			2663 3633		
none									OFF					
32 ns								-	· P	- 2		3000		
Gen (LF) out after (CR)	<b>'</b>											CME.		
yes				9 (1990) 1. (1990)								OF		
no						2000		. 1			. 0000	44. (	<u> </u>	

Interface Manual

Page A.3

"5 - a3.PICT" 242 KB 2000-11-12 dpi: 400h x 400v pix: 1785h x 2887v

#### Super Serial Card

#### Switch Settings Communications Hode

(Jumper block towards modem)

		_		tch S		_	_ 1		_		ich S		_	_
Mode Selection:	1	<u>2</u>	3	4	5	6	7	1	2	3	4	5	6	7
Communications Mode				- 装装 i	CH	0))								
Special Switches:	***						***		***	***			-	
Interrupts OFF													OFF	
Interrupts ON													CFF CM	
RS-232-C Signals							<b>CM</b>					### ###		GE .
Baud Rate:											-			
undefined	CH	<b>3</b> **	ON	CN.					- 9132 - 3132					
50	C	CN:	ON	OFF										
75		(3)	OFF	ON				986			200			
109.92 (110)	THE STATE OF	ON	OFF					<b>養養</b>						
134.58 (135) 150	(M)	OF F	CM CM	ON				188						
300	ON	(# F	OF F	QN:										
600	ON	(FF	OF F						<b>金貨</b>					
1200	OFF	Č.	ON.	CON.										3
1800	<b>OF</b> F	ON:	ON:	OFF										
2400	OF F	(3)	ŒF	08										
3600	11	CIN	ŒF											
4800	11	OFF		68										
7200	OFF	OFF	C#t	ŒŦ	10201 32301									
9600	(FF	OF F	Œŧ	QN										
19200	(F	OF F	OFF	OFF										
Data Format:														
8 data, 1 stop							3333	ON	Q.			31 <b>2</b> 33		
7 data, 1 stop		9333						()	OF F					
8 data, 2 stop								OFF	ON:					
7 data, 2 stop								OFF	OFF	- 11		11-11		
Parity:		100 TO			: <b>5</b> 0									
None														
Odd		112				3333				CIM CIMPE	CE T			
Even (LF) Out After (CR)		33.00		****			3,500		- 00 (0) - 00 (0)	UT!	43	3000	***	
Yes Yes												æ		
No.														
<del>10</del>		_ 0500		10.15		200	3000	1 33 33	1000	9200		97.5	3000	1130

Interface Manual

Page A.4

"5 - a4.PICT" 211 KB 2000-11-12 dpi: 400h x 400v pix: 1773h x 2827v

### Parallel Interface Card (2-PIC) Part # 820-5006-A Order # A2B0021

#### Pin Outs

DB-25	
Connector	Signal Name
	.Data In, Bit O
	. Signal Ground
	.Data In, Bit 2
	.Signal Ground
	.Data Out, Bit O
	.Data Out, Bit 1
7	. Blocked
	.Data Out, Bit 2
	.Data Out, Bit 5
	.Data Out, Bit 6
	.Data Out, Bit 7
	.Data In, Bit 4
15	
16	. Acknowledge In
17	
18	
19	
20	Signal Ground
	Data In, Bit 6
22	Data Out, Bit 3
23	Data Out, Bit 4
24	
25	Data In, Bit 3

Interface Manual

Page A.5

"5 - a5.PICT" 87 KB 2000-11-12 dpi: 400h x 400v pix: 1629h x 2905v

#### Parallel Interface Card (2PIC)

#### Switch Settings

	1	2	3	4	5	6	7
Strobe Length							*****
1 microsecond	OF F	OFF	OFF				
3 microseconds	<b>EN</b>	OFF	OFF				
5 microseconds	OFF	ON:	OFF				
7 microseconds	ON	ON.	OFF				
9 microseconds	OFF	OFF	ON				
11 microseconds	ON	OF F	ON				
13 microseconds	OFF		ON				
15 microseconds	ON	CAN	(3)				
Strobe Polarity							
Positive				OF F			
Negative				ON			
ACK Polarity	****						
Positive					<b>3F∓</b>		
<u>Negative</u>					ON:		
Firmware Select						****	
Parallel (LF)						OF F	
Centronics (No LF)						ON	
Interrupts							****
Disable							ar e
Enable							ON:
			120000000000	20000000	0.0000000	4600000	<b>M47</b> ()

Interface Manual

Page A.6

"5 - a6.PICT" 161 KB 2000-11-12 dpi: 400h x 400v pix: 1629h x 2857v

#### High Speed Serial Interface

Part # 670-X005 (Discontinued)

#### Pin Outs

DB-25 Connector	Signal Name
2	Receive Data (Rx)
3	Transmit Data (Tx)
7	Signal Ground
12	Current Loop Data In (Return)
13	Current Loop Data In
	Current Loop Data Out

- Note 1: This card does not have any hardware handshaking. It can therefore only be used at slow baud rates.
- Note 2: The PROM P8A should be installed in place of the existing PROM P8 when using Qume compatible printers. Be aware that switch 4 has a different function with this setup and must be in the OFF position.

#### Switch Settings

	1	2	3	4	5	6	7
Baud Rate							
110	ON	ON	ON				
134.5	OFF	ON.	ON				
300	ON	OFF	ON				
1200	OFF	OFF	ON				
2400	ON	CIN	OFF				
4800	OFF	ON	OFF				
9600	I ON	OFF	OFF				
19200	OFF	OFF	OFF				i de la companya da companya d
Delay After <cr></cr>	1						
None	1			OFF			
1/4 Second		111		OH			
Line Width/Video							307507
40/Video on					ON	ON	
72/Video off					OFF	ON	
80/Video off	1			300 960 030 960	ON	OFF	
132/Video off					OFF	OFF	
<pre><lf> After &lt;0R&gt;</lf></pre>							
Yes							OFF
No							ON

Interface Manual

Page A.7

"5 - a7.PICT" 165 KB 2000-11-12 dpi: 400h x 400v pix: 1791h x 2893v

#### Parallel/Centronics Card

Part # 820-0005-01 (Discontinued)

These two cards although different in name are virtually identical apart from those differences outlined below.

Pin Outs (same for both cards)

20 Pin Header	Signal Name
1	Ground - Pin 1 and 20 must be used.
2	ACK (Handshake)
8	Strobe
10	DPO (LSB)
11	DP1
12	DP2
13	DP3
14	DP4
15	DP5
16	DP6
17	DP7 (MSB)
	Ground - Pin 1 and 20 must be used.

Note: The differences between the two cards are as follows.

Centronics: The Centronics card is supplied with the PROM P9 (341-0019) installed and does NOT add a linefeed after carriage return. The Jumper block is pre-configured for negative STROBE and positive acknowledge (ACK) signals.

Parallel: The Parallel card is supplied with the PROM P1 (341-0005) installed and does add a linefeed after carriage return. With this card you must wire the jumper block yourself. For further information please refer to page 6 of the manual.

Interface Manual Page A.8

"5 - a8.PICT" 125 KB 2000-11-12 dpi: 400h x 400v pix: 1767h x 2899v

#### Apple Communications Interface

Part # 670-X003 (Discontinued)

#### Pin Outs

DB-25 Connector	Signal Name
2	. Transmit Data (Tx)
3	. Receive Data (Rx)
4	. Request To Send (Permanently high)
	. Clear To Send (Permanently high)
	. Signal Ground

<u>Note</u>: This card does not have any hardware handshaking. It can therefore only be used at slow baud rates.

Interface Manual

Page A.9

"5 - a9.PICT" 64 KB 2000-11-12 dpi: 400h x 400v pix: 1719h x 2875v

#### Apple //c Interface Ports

#### **Contents**

Page	Description
	. Serial Ports . Video Port

Interface Manual

Page B.1

"5 - b1.PICT" 34 KB 2000-11-12 dpi: 400h x 400v pix: 1821h x 2863v

Source: Apple Computer Inc. UK Page 0014 of 0048

#### **Printer & Communication Ports**

#### Pin Outs

The Serial ports on the //c are standard 5 pin DIN, however, they are not labelled as standard DIN. So when looking at the back of the //c we have pin outs as follows:—

# 5 Pin DIN Position Signal Name 1 . . . . 4 O'Clock . . Data Terminal Ready 2 . . . . 5 O'Clock . . Transmit Data 3 . . . . 6 O'Clock . . Ground 4 . . . . . 7 O'Clock . . Receive 5 . . . . 8 O'Clock . . Data Set Ready

Note: The serial ports on an Apple //c are essentially identical, the pin connections being the same on both. The main difference being the printer port is preconfigured for 9600 baud and the communication port is preconfigured for 300 baud. The printer port appears to software as slot 1, the communication port as slot 2. The settings of these ports can be changed with the Apple //c System Utilities disk. Please see the System Utilities manual for precise details.

#### Characteristics at Startup

After power-up, the printer firmware sets the configuration given below:

9600 baud	8 data bits	No parity bits
2 stop bits	80 chars per line	LF after CR
Command character :	is CTRL-I	

Interface Manual Page B.2

"5 - b2.PICT" 137 KB 2000-11-12 dpi: 400h x 400v pix: 1773h x 2911v

#### Video Port

This port requires an external PAL modulator to connect to a TV set. It is **NOT** an RGB port, to connect to an RGB monitor an external piece of hardware is required.

#### Pin Outs

15 Pin		
Connector	Signal	Description
		Video text signal from GLU
2	. 14M	14MHz Timing signal from master
		oscillator
3	. SYNC	Display synchronisation signal from
		IOU pin 39.
4	. SEGB	Display Vertical counter bit from IOU
		pin 4.
5	. 1VSOUND	1v sound signal.
		Video shift Register load enable.
		Active area display blanking.
8	. +12v	Regulated +12v.
		Ram row address strobe.
		Graphics mode enable.
		serialised character generator
		output.
<b>1</b> 2	. NTSC	Composite NTSC video signal.
13	. GND	Ground.
		Causes half dot shift if high.
		Colour reference signal.

Interface Manual

Page B.3

"5 - b3.PICT" 104 KB 2000-11-12 dpi: 400h x 400v pix: 1791h x 2803v

#### Apple /// Interfaces

#### **Contents**

Page	Description
C.2	. Serial Card ///
C.2	. Serial Port
C.4	. Parallel Interface Card (UPIC
_	Colour Video Port

Interface Manual

Page C.1

"5 - c1.PICT" 41 KB 2000-11-12 dpi: 400h x 400v pix: 1851h x 2893v

Source: Apple Computer Inc. UK Page 0017 of 0048

# Port C: RS-232-C Serial Interface & Serial Card 3.

#### Pin Outs

DB-25 Connector	Signal Name
1	Shield Ground
2	Transmit Data (Tx)
3	Receive Data (Rx)
	Request To Send (RTS)
	Clear To Send (CTS)
6	Data Set Ready (DSR)
7	
	Data Carrier Detect (DCD)
	Data Terminal Ready (DTR)

Note: Serial Card 3 has a modem eliminator button, when this button is "in" the above pin outs are correct. If the button is "out" this has the effect of a modem eliminator cable being installed (see page G.2).

Interface Manual

Page C.2

"5 - c2.PICT" 91 KB 2000-11-12 dpi: 400h x 400v pix: 1755h x 2899v

## Port C: RS-232-C Serial Interface & Serial Card 3.

The following table explains how to configure the driver for the RS232 port using System Utilities, remember on the Serial Card 3 driver to set the slot number.

#### Data Configuration Block

	\$00	\$01	\$02	\$03	\$04	\$05	\$06	\$07	\$08	\$09	\$0A	\$0B
Baud Rate:		8888		**	98.55							
110 134.5	\$03 \$04		Ð	Ð	₿				養養		報題	
134.5	504		£	£	£			38			- 養養	
300	\$06		£	1	1				3.8		※単	
600	907	33	A	A	ð						(A) (A)	
1200	\$08		9	¥	8							
1800	\$09										養養	
2400	\$3A		A	A	я	2014 2015					装飾	
4800	SOC		F	F	<b>F</b>					靈譜		
9600	SOE SOE		7	7	¥			22			養養	
Data Format:			-ŧ-	- ₹ -	-ε-							
Bits Parity	1993	<b>***</b>	R	R	<b>A</b>			##	遊費	禁护	<b>等</b>	<b>新</b> 養
8 none		300				38			990 by 200 80	養養		
7 odd		822	t	1	Ŧ			##	製造			- 養養
7 even		\$26	A	1	0	33				養養		
7 MARK	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	SZA	8	N	R					養養	<b>美黎</b>	- 教芸
7 SPACE		924	•	E	8				<b>多基</b>		## ##	88
6 odd		6.5	1					**				
6 even		<b>E</b>	Δ	<b>F</b>	•	***						
6 HARK		* #A	6		•		9000 9000		0.0000 0.0000			
6 SPACE		44	Ē	E	È							
Conn Protocol	100000 100000	¥83.5		š -	- b-	2000	2000 2000	30.00	100000	- 10 Sec.	2000	
none			•			<b>\$</b> 00						<b>\$</b> 00
XON/XOFF	1 32500 33500					\$00 \$80 \$40	613	811	SEDF	884		S.O.T.
ENQ/ACK			*			6.20	906		<b>44.</b>		080	200
			**			3	\$13 \$05 \$03	\$06 \$06	1000A		630 630	\$80
ETX/ACK			<u>.</u>			200	303	S CAD	حمد	€o-	530	000
HW Handshake			<b>.</b>			<b>⊅</b> €€			<b>SOF</b>	\$84		200
		10000	X	1000		30,00	## <u>*</u>	<b>XX</b>	989		333	

#### Delays (bytes \$02...\$04).

Using this driver to connect to a printer may require that you set delay times while the printer advances to a new line or the top of a new page. These delays are given in the range \$00...\$FF characters. The RS232 driver will wait for the time taken to transmit the amount of characters specified before it sends the following character.

Interface Manual

Page C.3

"5 - c3.PICT" 229 KB 2000-11-12 dpi: 400h x 400v pix: 1743h x 2887v

#### <u>Universal Parallel Interface Card</u> (UPIC)

Part# 670-0017 Order# A3B0002

#### Pin Outs

#### 20 Pin Connector

Pin Number Signal	<u>Pin Number</u> Signal
1 Signal Ground 2 Acknowledge ing 3 Port B input D: 4 Port B input D: 5 Port B input D: 6 Port B input D: 7 Port B input D: 8 Strobe output 9 Port B input D: 10 Port A output [	11   Port A output DO1

#### 40 Pin Connector

<u>Pin Number Signal</u>	Pin Number	Signal
1 Port B output DOO	21	Port A output DO1
ZPort B output DOI		Port A output DO2
3 Port B output DO2		Port A output DO3
4 Port B output DO3		Port A output DO4
5 · · · · · · Port 8 output DO4		Port A output DOS
		Port A output DO6
7Port B output DO6		Port A output DO7
8 Port B output DO7		Port B input DI6
9 · · · · · Pin removed		Port B input DI7
10 Pin Removed		Signal Ground
11 Signal Ground		Pin removed
12 Acknowledge input	32	Pin removed
13 Port B input DIO	33	Data ready output
14 Port B input D11		Signal ground
15 Port B input D12		Signal ground
16 Port B input D13		Signal ground
17 Port B input D14		Signal ground
18 Strobe output		Data ready ACK in
19 Port B input D15		Signal ground
20 Port A output DOO		Signal ground

Interface Manual

Page C.4

"5 - c4.PICT" 150 KB 2000-11-12 dpi: 400h x 400v pix: 1743h x 2893v

#### <u>Universal Parallel Interface Card</u> (<u>UPIC</u>)

#### Data configuration block

Commonly used configurations for the driver .PRINTER on the SOS 1.3 Update diskette are listed in the following table.

Printer	Device	configur	ation bl	ock (DCB	values
	ERMASK	ERRSTAT	AUTOLF	CTRLURD	TIMEOUT
	00	01	02	03	04
Centronics 779/700	EO	CO	40	00	0A
Centronics 730/737	CO	CO	00	00	5A
Anadex DP-8000	l EO	CO	00	00	ŚÃ
Printronix P300	ĒŎ	co	00	00	ÓA
C.Itoh 8510A	E8	C8	40	00	0A
IDS 440/445/460	60	40	00	00	5A
Epson MX-80	E8	C8	00	00	0A
TI 810	E8	co	00	00	0A
Any printer connected				00	UH
with Apple ][ cable	00	00	00	00	0A

For further information on the Data Configuration Block please refer to page 19 onwards of the Universal Parallel Interface card manual.

NOTE: The driver .PARALLEL is used for two way communications i.e. for input and ouput, when using the 40 pin connector. This driver has a three byte configuration block. Please refer to pages 29 onwards in the manual for more information.

#### Colour Video Port

#### Pin Outs

DB-15 Connector	Signal	Name
1	Shield (	Ground
		One of 4 RGB outputs. This (and
		pins 5,9 & 10) is a TTL output with
		instantaneous colour information.
		A linear-wieghted sum of these four
		signals will form a true 16 colour
		RGB video signal.
3	SYNCH -	Composite negative sync signal.
4	PDI -	Not used
5		
6	GND -	Power & Signal Ground
7	-5V -	Maximum load 200 mA
8	+12V -	Maximum load 500 mA
9	XRGB2 -	See pin 2
10		
11	BWVID -	NTSC B&W Composite video with
		negative going sync, 1 volt peak to
		peak into a 75 ohm load.
12	NTSC -	NTSC Colour video with negative
		going sync, 1 volt peak to peak
		into a 75 ohm load.
13		Power & Signal Ground
		Maximum load 200 mA
15	+5V -	Maximum load 1 Amp.

Note: All power supply ratings assume that no peripheral cards are installed in the system. If there are cards in the system, the current drawn by those cards counts as part of the total current available for each supply.

Interface Manual

Page C.6

#### Macintosh Interface Ports

#### **Contents**

Page Description

D.2 ..... Serial Ports

Interface Manual

Page D.1

"5 - d1.PICT" 34 KB 2000-11-12 dpi: 400h x 400v pix: 1617h x 2905v

Source: Apple Computer Inc. UK

Page 0023 of 0048

# Macintosh Communications Connectors RS422

The following pin connections apply to both the communications and printer interface ports.

#### Pin Outs

DB9	RS232	RS422
Connector	Signal Name	Signal Name
1	Chassis Ground	Ground
2		+5V
3	Signal Ground	Ground
4		Tx+
5	Transmit Data (Tx)	Tx-
6	` ,	+12V
7	Handshake (DSR)	Handshake
8	,	Rx+
9	Receive Data (Rx)	Rx-

Note: Macintosh uses pin 7 as an input when communicating to printers in order to determine whether the printer is ready to receive data (hardware handshaking). Macintosh uses software handshaking for connecting to remote computers/terminals.

Interface Manual

Page D.2

#### Lisa Interface Ports

#### **Contents**

Page Description

E.2.... Serial Ports

Interface Manual

Page E.1

"5 - e1.PICT" 31 KB 2000-11-12 dpi: 400h x 400v pix: 1719h x 2899v

Source: Apple Computer Inc. UK

Page 0025 of 0048

#### **Lisa Serial Ports**

#### Pin Outs

DB-25	Serial A -	Serial B -
Connector In/Out	Signal Name	Signal Name
1	Protective Ground	Protective Ground
2 OUT .	Transmit data	Transmit Data
3 IN	Receive data	Receive Data
4 OUT .	Request To Send	Not connected
5 IN	Clear To Send	Not connected
6 IN	Data Set Ready	Data Set Ready
7	Signal Ground	Signal Ground
8 IN	Data Carrier Detect	Not connected
15 IN	Transmit Clock	Not connected
17 IN	Receive Clock	Not connected
19 IN	Not connected	Receive Data Minus
	Data Terminal Ready	
24 OUT .	Transmitter Clock	Not connected

#### Note:

Lisa Office System software (e.g. LisaTerminal) uses full duplex, asynchronous communication lines. The lines are attached to Serial A or Serial B on the back of the Lisa. Serial A and Serial B are 25-pin connectors that meet the requirements of EIA specification RS-232-C.

Serial A and B are wired differently. The Serial A connector is wired for full modem control signals. Serial B is wired with a special crystal oscillator that allows it to get all the common baud rates. Serial A uses the system clock and, as a result, cannot generate 3600 and 19200 baud.

Interface Manual

Page E.2

#### Printers/Plotters

#### **Contents**

Page	Description
F.2	Imagewriter Printer
	Daisy Wheel Printer
F.8	Dot Matrix Printer
F.11	Colour Plotter
F 12	The Apple Thermal Transfer Printer

Interface Manual

Page F.1

"5 - f01.PICT" 44 KB 2000-11-12 dpi: 400h x 400v pix: 1611h x 2905v

# Imagewriter 10" and 15" Order # A9M0303P and A9M0305P

Both of these printers are identical in terms of interface specifications and DIP switch functions. The interface is RS232C serial.

#### Pin Outs

DB-25 Connector	Signal
1 2 3 4 7	Frame Ground Transmit Data (Tx) Receive Data (Rx) Request To Send (RTS) Signal Ground Fault
۷	Data Terminal Ready (DTR)

Interface Manual

Page F.2

"5 - f02.PICT" 67 KB 2000-11-12 dpi: 400h x 400v pix: 1719h x 2881v

#### Imagewriter 10" and 15"

#### Switch Settings

			Su	i tch	SW1				Switch SW2							
	1	2	3	4	5	6	7	8	1	2	3	4				
Select alternative		***				***	***	***		***	***					
Character Sets:									<b>i</b> ፠ i							
English (US)	0	0	8													
Italian	1	Ð	0													
English (UK)		ř	ñ								**					
German	i	ñ														
Swedish																
French	ň	×		***					l 🎇							
Spanish									l‱							
		***	-	<del>- 88</del> -	***	<del>- ***</del> -	***	***		- 888	- <del>888</del> - <del>888</del>					
Page Length:																
72 Line				2												
66 Line				<u></u>	***		<u></u>				<u> </u>					
Eighth Data Bit:																
Ignore					0											
Recognize				900 900	Đ											
Character Pitch:				***			***				**					
Pica						Ø	Ø	- <b>333</b>								
Elite						8	O									
Ultracondensed						ñ	ñ				*					
Elite Proportional						0			liiii							
Line feed:		**	***		***						***					
Add LF after CR								•	I 333							
					***		***	0			***					
No LF after CR	1000		***	<del>- 33 -</del>	<del>-                                      </del>	- 1990 - 1990	***	- 323	1888	- 000 000	-					
Baud Rate:																
300									0	IJ						
1200				***					1	0						
2400									0	Ç	***					
9600		***		***	***		***			•	333 333	_				
Data Protocol Type:	1888	***	***					***								
XON/XOFF	( 🕷								· 🛞	C						
DTR	Ì▓□						***				8					

Note: 0 = Open C = Closed

Interface Manual

Page F.3

"5 - f03.PICT" 204 KB 2000-11-12 dpi: 400h x 400v pix: 1617h x 2899v

Source: Apple Computer Inc. UK

Page 0029 of 0048

# Daisy Wheel Printer Order # A3M0027

#### Pin Outs

DB-25	
Connector	Signal Name
1	. Chassis Ground
2	.Transmit Data (Tx)
3	. Receive Data (Rx)
4	. Request To Send (RTS)
5	.Clear To Send (CTS)
6	.Data Set Ready (DSR)
7	. Signal Ground
8	.Data Carrier Detect (DCD)
	.Data Terminal Ready (DTR)

Interface Manual

Page F.4

"5 - f04.PICT" 56 KB 2000-11-12 dpi: 400h x 400v pix: 1497h x 2785v

#### **Daisy Wheel Printer**

#### Switch Settings - Front panel

	1	2	3	4	5	6	7	8
Type Pitch:								
10 cpi	OFF	OFF						
12 cpi	ON	OFF						
15 cpi	OFF	ON						
Proportional	ON	CN						
Form Length:								
3 Inches	<b> </b>		Œ	OFF	OFF	OFF		
3.5 Inches			CN	ŒŦ	CFF	OFF		
4 Inches			ŒF	<b>(38</b> )	OFF	OF F		
5 Inches			ŒF	ŒF	QN	ON		*** ***
5.5 Inches			ON	<b>(X)</b>	OFF			
6 Inches			0F#	ŒŦ	ON:	0FF		
7 Inches			ON	OFF	ON	OFF		
8 Inches			ŒF	ON:	ON	OFF		
8.5 Inches			CN.	ON	ON	OFF		
9 Inches			<b>CN</b>	OFF	ON	ON		
10 Inches			ŒF	QH.	CN(	ON		多語 医型
11 Inches			OFF	OFF	ŒF	ON		2000 2000
11 2/3 Inches			34	OFF	ŒF	CH)		3 (2) 2 (4)
12 Inches			ŒF	ON	OFF	<b>(34</b> )		
14 Inches			CN	ON	OFF	ON		遊客 遊遊
16 Inches		- 1000 - 2000	ON	ON	<b>CM</b>	ON		<b>建筑</b>
Line Feed:		30 30 E						
LF after CR							ON	
No LF after CR							OFF	
Lines per Inch:								
8 Lines								ON
6 Lines								(¥F

Interface Manual

Page F.5

"5 - f05.PICT" 149 KB 2000-11-12 dpi: 400h x 400v pix: 1611h x 2887v

#### **Daisy Wheel Printer**

#### Switch Settings - Rear panel

	1		Svit	ich S	WI-A	)			1		Switc	th St	2- <b>R</b>	
	1	_ 2	3	4	5	6	7	8	1	2	3	<b>A</b>	_	5 7 <b>8</b>
Character Sets:								<u> </u>	<b> </b>	**	× 3	88 X	<u> </u>	) 7 <b>8</b>
ASCII Standard	ĺ								128.5	OF 1	ŒF	<b>**</b>		
USA WP	İ											XXX 8		
Italian	İ									<b>G</b>	200.00			
Swedish	i								G.		20000000			
English UK	İ								er.					
French	i									<b>OF</b> F				
German	İ										- 00:00 3		8 8	
<u>Spanish</u>	İ										*****			
PRINT:				-							****			
Bidirectional	İ													
Unidirectional	j								 				$\& \otimes$	
Line Feed:	Ī												Ħ	
Auto CR/LF	Ì							ì						
No Auto CR/LF	ĺ							i					• • • • • • • • • • • • • • • • • • •	
Setting:	Ī				-			$\dashv$						
Half Duplex	į							j						
Full Duplex	j							ì						
On Paper Out:														<b>GF</b> E
\$top	İ							ì						
Dont Stop	<u> </u>													CHE COPE

Interface Manual

Page F.6

"5 - f06.PICT" 146 KB 2000-11-12 dpi: 400h x 400v pix: 1851h x 2893v

### **Daisy Wheel Printer**

#### Switch Settings - Rear panel

		_		ch S	W1-A			1		Swit	ch S	<b>U</b> 2-8			
Ray Octor	1	2	3	4	5	6	7 8	1	_2	3	4	5	6	7	8
Baud Rate:	188	***						i							
110 baud	OFF	OFF						1							
150 baud		OF F	Œ					ĺ							
300 baud	DEF	CM	OF#												
600 baud	500		(FF												
1200 baud	OF F	0H 0F7	<b>CB</b> 1												
2400 baud	(34)	<b>(3)</b>	(2)												
4800 baud	tar#	01	CN(												
9600 baud		01	GN.												
Handshake:	1888														
ETX/ACK & DTR	i∭			ŒF	OFF		- XX								
XON/XOFF	i∭			<b>(34</b>	OFF		- Sil								
DTR	i‱				ON										
Setting:	188						- 1								
No Moden	i∭						- 88 I								
fioden	i					r FF									
Parity:	1						- 200 I	·····							_
Space	i					06									
Mark	i					ŒŦ	3								
Even	i‱					OM.	9F								
<u>0dd</u>	i					OFF	25								

Interface Manual

Page F.7

"5 - f07.PICT" 137 KB 2000-11-12 dpi: 400h x 400v pix: 1815h x 2863v

# Dot Matrix (DMP) Order # A2M0059 (Discontinued)

#### Pin Outs

Amp Pin No. Signal Name	Amp Pin No. Signal Name
1 Data STB (-ve) 2 Data 1 3 Data 2 4 Data 3 5 Data 4 6 Data 5 7 Data 6 8 Data 7 9 Data 8 10 ACK (-ve) 11 Input Busy 12 Paper Empty 13 Select 14 Ov	29 Ground (TP pin 11) 30 Ground (TP pin 12) 31 Input Prime (-ve)
14 UV 15 NC	32 Fault (-ve) 33 Ov
16 Ov 17 Chassis Ground	34 NC 35 NC
18 +5v	36 Input Busy

Note: TP = Twisted Pair

Interface Manual

Page F.8

"5 - f08.PICT" 96 KB 2000-11-12 dpi: 400h x 400v pix: 1821h x 2857v

#### Dot Matrix (DMP)

#### Switch Settings

			Swi	itch	SU1			1			Swit	ch S	<b>W</b> 2			
	1	2	3	4	5	6	_ 7	8	1	2	_ 3	4	5	6	7	8
Select alternative							305									
Character Sets:								i								
English (US)	0	D	O					- #i								
Italian	C	0	0					ii								
English (UK)	C	¢	O	iosi. Esc			1394 300	i								
Cernan	0	0	C				900 490	i								
Swedish	C	0	С					*1								
French	0	C	C				993 933	*1								
Spanish	C	00000	00000000													
Page Length:			10.0													
72 Line				C				- \$i								
66 Line				D				- Si								
Select Codes:						113.										
Ignore		145. 145			C			#i								
Respond	İ	2003 2004			Ø											
On Buffer Overflow:				***				-111								
Line feed		1941 1944				C										
No line feed		808 880				Ø		靈山								
Print:			1235 1345					Î								
On CR, LF, VT, FF							C	i								
After CR only					939 339		Ø	靈								
Line feed:																
Add LF after CR							985 985	C								
Mo LF after CR	Ì				9994 9994			ĎΙ								

Note: 0 = 0pen C = Closed

Interface Manual

Page F.9

"5 - f09.PICT" 102 KB 2000-11-12 dpi: 400h x 400v pix: 1827h x 2857v

#### Dot Matrix (DMP)

#### Switch Settings (cont)

	1		Swi	tch	SU1-	Switch SU2-										
	11	2	3	4	5	6	7	8	1	2	₹	~., 	<b>77</b> 2		,	
Zero character:	1							<u> </u>		**	- <u> </u>		<u> </u>	6	(	- 8
Slash zero	İ								e	***						
Do not slash zero	Ì								Õ							
Input buffer:	Î								*** ***	-		***	***	***	- 333	
One line only	İ									6						
3k bytes	į														***	
Character spacing:										_ <b>-</b>	- 💥		***	- 🚟	***	- ***
Elite proportional	Ì							i					6			
Pica fixed width	İ							ŀ					6			
8th Data bit:										<del>- 33</del>	***		U	***	***	***
Ignore								į								
Recognize								Ē								
On power on:									-	<del>- 222</del> -	- 22	- 200	***	0		***
Select																
Deselect															Ų	
Print:									<u> </u>	338 333	- 383	- 1000 - 1000 - 1000	***	***	D.	***
Unidirectional								1								
Bidirectional										600 600						Ų

Note: 0 = Open C = Closed

Interface Manual

Page F.10

"5 - f10.PICT" 109 KB 2000-11-12 dpi: 400h x 400v pix: 1869h x 2887v

# Colour Plotter Model # A9M0302P

The Apple Colour Plotter uses a standard RS232C interface so can be connected to virtually any computer.

#### Pin Outs.

DB-25 Connector	Signal Description
	Frame Ground Receive Data (Rx)
4	+12 VDC
	Signal Ground Data Terminal Ready (DTR)

#### Switch Settings

	] 1	2	3	4	5	6	7	8
Baud Rate:								
9600	l iii					OH	ON.	CN
4800	j šš					CN	CN	ŒŦ
2400	išš						OFF	<b>CR</b>
1200	İ					<b>134</b>	OFF	OFF
600	išš					OFF	(M)	CH
300	188					OFF	(H	OF T
150	i					OFF	<b>OF</b> F	CIN
75						0#		9FF
Stop Bit:								
1 Bit	İ			ŒŦ	CM			
1.5 Bits	i			C#	OF F			
2 Bits	i			Œ	OF F			
Parity:	1 888							
Parity	ĺ	ŒŦ						
No Parity	i‱							
Odd Parity	i		CM					
Even Parity	i		OF F					
Data Length:	I							
7 Bit	CH							
8 Bit	OFF						2003) 2003)	

Interface Manual

Page F.11

"5 - f11.PICT" 144 KB 2000-11-12 dpi: 400h x 400v pix: 1731h x 2875v

# The Apple Thermal Transfer Printer

#### Pin Outs

Connector Signal	
1 Frame Ground 2 Transmit Data (Tx) 3 Receive Data (Rx) 4 Request To Send (RTS) 7 Signal Ground 20 Data Terminal Ready (D	TR)

## <u>Switch Settings</u>

	1	2	3	4	5	6	7	8
Select Alternative					ñ		<u>-</u> -	—, <u>—</u> , —
Character Sets:					O			
American	OFF	OFF	OFF		1			
Italian	ON	OFF	OFF		<b>X</b>			
American	OFF	ON	0FF		U	gas.	1 - 1 1 - 1 - 1	
British	ON	ON	OFF		Č			
German	OFF	OFF	ON		6			+** 1 <sub>4</sub>
Swedish	ON	OFF	ON		'n			
French	OFF	ON	ON				N pr	
Spanish	ON€	ON	ON					
Add LF after CR			<del></del>	<del></del>				-
Yes				ON				
NO				0FF				
Print Intensity			-1111				<del></del> -	
Normal						ON		19 TH
Low						OFF		
Baud Rate			· · · · · · ·			<u></u>		
1200							COME	\$ <u>\$</u>
9600							on Off	
Handshake							ALT.	
XON/XOFF								014
DTR								ON
							- 1	OFF

Interface Manual

Page F.12

"5 - f12.PICT" 122 KB 2000-11-12 dpi: 400h x 400v pix: 1791h x 2911v

Source: Apple Computer Inc. UK

Page 0038 of 0048

# Configuration Tables

# **Contents**

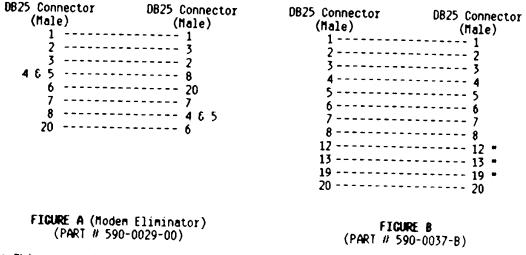
Page	Description
G.2	. Interface Cables
G.4	. Apple Daisy Wheel Printer
<b>G.</b> 5	. Apple Imagewriter
G.6	. Apple Dot Matrix Printer
G.7	. Apple Colour Plotter
G 8	The Annle Thermal Transfer Printer

Interface Manual

Page G.1

"5 - g1.PICT" 46 KB 2000-11-12 dpi: 400h x 400v pix: 1629h x 2875v

# Interface Cables



\* This connection is to be found in the supplied cable but is not actually required when you make your own cable.

DB9 Connector (Male)  1 3 5 7 9	DB25 Connector (Male) 1 7 3 20	DB9 Connector (Male) 1 2 3 5 7 9	DB25 Connector (Male) 
FICU	RE C	FICURE D (Maci	ntosh to Hodem)
(PART # 5	590-0169)		# N/A)

Interface Manual

Page G.2

"5 - g2.PICT" 74 KB 2000-11-12 dpi: 400h x 400v pix: 1869h x 2893v

# **Interface Cables**

5 Pin Din (Male) 1 2 3 4 5	DB25 Connector  (Male)372	20 Pin DIL Connector (Fenale)  1 8 10 11 12 13 14 15 16 20	Amphenol Connector (Male) 14 10 3 4 5 6 7 8 9 16
	CURE E 590-0191-A)	FICUR (PART # 5	

Interface Manual

Page G.3

"5 - g3.PICT" 61 KB 2000-11-12 dpi: 400h x 400v pix: 1737h x 2899v

# Daisy Wheel Printer Configuration Table

System	Rear Panel SW-1 12345678	Switches SW-2 12345678	Front	CABLE REQUI	
Apple ///	11100111	00101001	10000100	A•B	*
Macintosh	N/A	N/A	N/A	N/A	
Lisa	11100111	00101001	10000100	A+B	
Apple //c	11100111	00101001	10000100	E	**
Super Serial	11100111	00101001	10000100	В	*
High Speed Serial	00100111	00101001	10000100	В	*

Note: 0 = OFF = OPEN \* - See configuration below 1 = ON = CLOSED \*\* - Using default port settings

## Apple /// Driver Configuration

Driver			Dat	a Co	mfi	gut	atio	on E	loc	k			
	0	1	2	3	4	5	6	7	8	9	A	B	l
R\$232	OE	00	10	10	10	00	13	11	DF	84	50	80	Ī
PRINTER	OE	00	10	10	10			1					١

## Super Serial Card Configuration

	1	2	3	4	5	6	7
							ON
SU2	ON	ON	OFF	OFF	ON	OFF	OFF

**NOTE**: Jumper block should be pointing towards terminal.

## High Speed Serial Card Configuration

	1	2	3	4	5	6	7
Switches	OFF	OFF	ON	OFF	OFF	OFF	OFF

NOTE: The High Speed card must have the PROM P8A installed in place of PROM P8 to ensure no data is lost.

Interface Manual Page G.4

"5 - g4.PICT" 136 KB 2000-11-12 dpi: 400h x 400v pix: 1791h x 2911v

Source: Apple Computer Inc. UK Page 0042 of 0048

# Imagewriter Printer Configuration

System	SU-1	SV-2	CABLE REQU	TRED
	12345678	1234	See figure	:-
Apple ///	11001100	1100	A+B	*
Macintosh	11001100	1100	) c	
Lisa	11001100	1100	A+B	
Apple //c	11001100	1100	E	* *
Super Serial	11001100	1100	В	#
High Speed Serial	11001100	0000	В	#

#### Apple /// Driver Configuration

Driver		Data Configuration Block											
	0	1	2	3	4	5	6	7	8	9	A	B	1
R\$232	OE.	00	10	10	10	00	13	11	DF	84	50	80	
PRINTER	<b> 0€</b>	00	10	10	10								Ì

## Super Serial Card Configuration

_	1	2	3	4	5	6	7	Ĺ
SW1	0FF	OFF	OFF	ON	OFF	ON	ON	Ī
SW2	ON	ON	OFF	OFF	ON	OFF	OFF	ļ

NOTE: Jumper block should be pointing towards terminal.

## High Speed Serial Card Configuration

	1	2	3	4	5	6	7	Ĺ
Switches	ON	OFF	ON	ON	OFF	OFF	OFF	Ī

NOTE: The High Speed card must have the PROM P8 installed.

Interface Manual Page G.5

"5 - g5.PICT" 119 KB 2000-11-12 dpi: 400h x 400v pix: 1779h x 2887v

Source: Apple Computer Inc. UK

Page 0043 of 0048

# **Dot Matrix Printer Configuration Table**

System	SV-1 12345678	SU-2   12345678	CABLE REQUIRED See figure:-
Apple ///	11001010	00000110	C *
Macintosh	N/A	N/A	N/A
Lisa	11001010	00000110	C
Apple //c	N/A	I N/A	N/A
Centronics Card	11001011	00000110	F
2PIC	11001010	00000110	G *

Note: 0 = OFF = OPEN \* - See configuration below 1 = ON = CLOSED

# Apple /// Driver Configuration

Driver	ļ	Data Configuration Block										1				
	0	1	2	3	4	5	6	7	8	9	A	В	Ì			
PRINTER	60	40	00	00	64				Ī	Î			İ			

# Parallel Interface Card (2PIC) Configuration

	1 1	2	3	4	5	16	171	Ì
Switches	OFF	OFF	OFF	ON	ON	OFF	OFF	l

Interface Manual

Page G.6

"5 - g6.PICT" 87 KB 2000-11-12 dpi: 400h x 400v pix: 1755h x 2881v

# Colour Plotter Configuration Table

System	SW-1	CABLE REQUIRED
	12345678	See figure:-
Apple ///	10111100	A+B *
Macintosh	N/A	N/A
Lisa	N/A	N/A
Apple //c	01101100	E **
Super Serial	01101100	B *
High Speed Serial	N/A	N/A

#### Apple /// Driver Configuration

Driver	1	Data Configuration Block											
	0	1	2	3	4	5	6	7	8	9	A	8	I
R\$232	08	22	00	00	00	00	13	11	DF	84	50	80	Ī
PRINTER	08	22	00	00	00				1		ĺ	ĺ	ĺ

## Super Serial Card Configuration

	1	2	3 ON	4	5	6	7
SUI	OFF	ON	ON	ON	OFF	ON	ON
SW2	ON	OFF	OFF	ON	OFF	OFF	OFF

NOTE: Jumper block should be pointing towards terminal.

Interface Manual

Page G.7

"5 - g7.PICT" 100 KB 2000-11-12 dpi: 400h x 400v pix: 1773h x 2881v

# The Apple Thermal Transfer Printer Configuration Table

System	SU-1 12345678	CABLE REQUIRED See figure:-			
Apple ///	11010000	A+B	*		
Macintosh	11010000	C			
Lisa	11010000	A+B			
Apple //c	11010000	E	**		
Super Serial	11010000	В	#		
Migh Speed Serial	N/A	N/A			

## Apple /// Driver Configuration

Driver		Data Configuration Block											
	0	1	2	3	4	5	6	7	8	9	A	В	
RS232	OE.	00	10	10	10	00	13	11	DF	84	50	80	Ī
PRINTER	[Œ	00	10	10	10			İ .	İ	ĺ		İ	ŀ

## Super Serial Card Configuration

	1	2	3	4	5	6	7
SW1	OFF	OFF	OFF	ON	OFF	ON	7 ON
SW2	ON	ON	OFF	OFF	ON	OFF	OFF

**NOTE**: Jumper block should be pointing towards terminal.

Interface Manual

Page G.8

"5 - g8.PICT" 105 KB 2000-11-12 dpi: 400h x 400v pix: 1803h x 2875v

The Apple (Peripheral) Interface Ma	anual October 1984
NOTES	
u <sub>C</sub>	i - notes.PICT" 15 KB 2000-11-12 dpi: 400h x 400v pix: 1407h x 2671v
Source: Apple Computer Inc. UK	Page 0047 of 0048

The Apple (Peripheral) Interface Manual -- October 1984 **Apple Computer, Inc.** 20525 Mariani Avenue Cupertino, California 95014 408 996-1010 TLX 171-576 "7 - back.PICT" 24 KB 2000-11-12 dpi: 400h x 400v pix: 1767h x 1360v Source: Apple Computer Inc. UK Page 0048 of 0048